The Interspecies Newsletter

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Communing with Orca

After a great international outcry, the Mexican Government has wisely decided not to pursue a proposal by Mitsubishi Corporation to construct the world's largest salt processing plant inside the World Heritage Site of San Ignacio Lagoon on the Baja peninsula. San Ignacio is one of the prime birthing areas of the gray whales. This decision by Mexico is easily the most encouraging whale news of the new year. Giving wilderness away to polluting industries was considered business as usual in the paradigm of the old violent century. Let us celebrate this victory as the expression of a new paradigm for the new century we leave our grandchildren.

Communing with Orca by Jean-Luc Bozzoli

Non-profit organizations usually start life with a single good idea. The founders take the trouble of incorporating their activities to promote their good idea, in the hope that an organization has a better chance to change the world than unorganized individuals. If the good idea catches on, it means someone else is listening. The message spreads, the circle expands, sponsorship increases. But here's where brambles tear at our skin. The modern imperative for expansion can easily dilute even the best good idea. Growth demands the hiring of staff focused on incremental budget increases, which often alters the original relationship to members. Language gets embellished in an effort to recast the good idea so it fits new perogatives of infrastructure. Given the competition for limited dollars, success comes primarily to those who believe their own language. In such a manner, too many good ideas get lost amidst the detritus of growth.

Given that reading of the non-profit process, it's hard to explain how IC has managed to survive for 25 years without sterilizing its center or bloating its edges. By most measures, we remain precisely as we started out: an indefinable art-experiential-science-educational-environmental-animal rights-outreach-shamanic-membership organization whose wide reach belies its tiny size. Place all those hyphenated adjectives in a different order and the good (but no less indefinable) idea still shines through. IC has always fallen through the cracks of the usual categories. While categorical fuzziness always makes fundraising difficult, it keeps the good idea bubbling.

These Taoist inconsistencies explaining IC's resistance to growth have come to mind often this past month as I sit at a Mac computer in the IC office editing 70 grueling hours of orca recordings made during the 1980's. Many years ago, back, in 1983, IC web worker, Virginia Coyle, came up with the profound idea of communalizing what had been an individual's personal research into musical communication with orcas. She poured much sweat and tears to develop a wilderness forum to support what, until that time, had always been my own private art project.

During the 1980's and early 1990's IC sponsored eight month-long Orca projects, bringing together more than 200 people into a community with the wild whales of northeastern Vancouver Island. The growth IC experienced at that time was completely organic, driven neither by mass

mailings nor any abstract desire for increase. We grew prinarily because an extended community of people shared a bond of empathy with nature in general, and whales in particular.

Many of these Orca Project "graduates" have remained loyal supporters of IC's development. Even today, though the organization attracts much attention from media and activists worldwide, in spirit we remain more an extended family than a corporation.

Our Sextet

Listening to seventy hours of underwater recordings is an immense task, sometimes made onerous by the often tinny quality of the 1980's-quality underwater speakers playing repetitive non-musical content. I limit my listening time to two hours a day, usually in the morning when my mind is clear enough to confront the job of selecting and categorizing the most intriguing selections of human/orca interaction. Worthy excerpts are re-recorded onto the Mac's hard drive for future editing. The second stage of the process will be far more interesting. Digital audio tools now make it possible to delete extraneous noise, mellow the edges of the most grating timbres, and fine tune the balance of whale and human volume.

No one has yet offered a good idea about what to do with the completed audio database. Ironically, how it gets used seems less important than the immediate process of simply *witnessing* this music. Much of it hasn't been heard by anyone since the day it was first recorded through underwater sound equipment dangling from a cabin cruiser anchored in a little cove in Johnstone Strait Canada. Some bits are amusing, others ponderous. Still others wonderful. These days I often find myself awash in reminiscences of what was the most powerful musical experience of my life. There are so many musical sessions represented here. Indulge me to describe just one.

During the summer of 1987, five talented musicians joined the project to formally explore ensemble-playing with the orcas. Nancy Rumbel is a Seattle-based Oboist and keyboard player whose Christmas album with Eric Tingstad is considered a classic. Gene Groeschel is a flautist and CD producer who specializes in interacting with birds in various places around the world. Mickey Remann is a German violinist, who has since gone on to produce "Liquidsound", an underwater multimedia experience (laser lights, underwater sound, holography) designed for health spas. Lama Tsenjur, a Tibetan Buddhist abbot living in Vancouver, was invited because our invitation committee felt that the whales might respond well to the Buddhist prayer *Om Mani Padme Hum*. Tsenjur's fluid, repetitive chanting reminds me more of Lightning Hopkins or John Lee Hooker than anything I've ever heard in a church. We were all delighted when he encouraged us to improvise with him as he prayed. I was the conductor, playing electric guitar in the bottleneck style of country blues.

We humans originated in the US, Germany, Canada, and Tibet. Our individual styles encompassed blues, free jazz, classical, newage, and chanting. Together we comprised a quintet. And here's the important part. Once we came aboard the boat and plugged into the underwater sound system, we considered the voices of the orcas as the cumulative sixth member of our ensemble. In other words, we were the world's first (and perhaps only) interspecies sextet. As might be expected, with so many types of music represented, this sextet created a very eccentric music. All of it was recorded by engineer Mike Sofen, who had also designed and built our custom underwater sound system.

This quintet assembled most every night in the boat's galley, huddling under candle light around a mess of wires, duct tape, and electronic gadgetry that comprised our recording studio. We preferred to work at night, mostly because boat traffic in the vicinity during the day generated too much engine noise to satisfy our recording sensibilities. Noisy whale watching boats were also a problem during the day, often following the orcas closely for hours at a time, giving us no opportunity to focus on an acoustic interaction. Speakers dangled in the water starboard and port, stereo hydrophones dangled from the bow and stern. Some nights it rained like crazy. Other nights the boat jostled so much in the windy chop, that it was impossible to record.

12 Tone Tibetan Blues

For some unknown reason that year, the whales showed little interest in joining the ensemble. Several nights in a row we played our bizarre blend of 12-tone Tibetan blues into the water for hours with nary a peep in response. Other nights they vocalized exuberantly, but never within half a mile of the boat. Stereo underwater speakers and hydrophones were, by necessity, dangling in the water just 20 feet apart off the four quadrants of the boat. This caused an unavoidable recording imbalance. When we cranked up the speakers to let the whale's hear our music across a distance, it became too loud for the hydrophones to record. Likewise, a half mile distance subdued the whale's calls to the volume of a whisper. Turning up the hydrophone amp added too much water roar to the mix, a problem caused by a stiff current flowing past the hydrophones.

In an attempt to solve the problem, one night engineer Sofen bundled the recording sub-system into a dinghy, and rowed to a location midway

China, Han Dynasty Porcupine

between the whales and the boat. Within half an hour, several whales from H pod entered the bay and started vocalizing. Our ensemble improvised an answer in response. Then the whales moved forward, closer and closer to the boat, eventually gifting us with one of the most memorable interactions of the eight summer orca project.

Even today, I easily recall that candlelit session, hearing Micky Remann trading free-jazz fiddle flourishes with my own swooping bottleneck licks, while Nancy Rumbel held down the bass line on a keyboard, with Lama Tsenjur chanting his one-line prayer through a microphone and Gene Groeschel added a unison line to the traditional Tibetan melody playing a kazoo-like elk call held underneath his tongue.

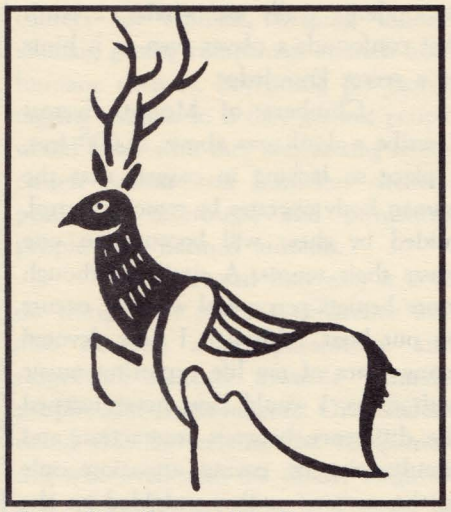
Is it Communication?

Over the years, those of us who had observed many different people play music with the whales, eventually reached an admittedly illogical conclusion about the orca's own response. They are attracted primarily to music-makers who are having a good time. While the orcas display no special interest in compositional virtuosity—for example, a soloist rendering Mozart with great precision—they seem highly attuned to soloists and ensembles who play with soulfulness.

Musician's call this expression of a smooth path that guides movement effortlessly: *getting into the groove*. The mechanics of rhythm, harmony, and timing take on substance greater than the sum of its parts. It carries the players aloft on the flow of the music even as they perform it. What affects the players affects the audience, turning the sensuous experience communal.

George Will has written that, "to be in a groove is not to be mechanical, it is to be an animal, with the grace that only something living can have." It is for this reason that the groove seems as capable of mitigating the species barrier as easily as it cuts through the performer/audience barrier.

That night, our "groove" was



China, Han Dynasty Roe Deer

as good as it ever got with the whales. We played like animals. Like cavemen.

In my recent book, The Charged Border, I describe the process of playing music with orcas in some detail. It bears repeating in the context of that night's interaction:

Over the years, musicians have discovered various techniques to facilitate interspecies communication. Foremost is the routine of adding rhythmical silent spaces to an improvisation as an invitation for a whale to fill in the hole. If the orca vocalizes only in the allotted space most people regard it as a response. Some times it is, although congruency is not always what it seems.

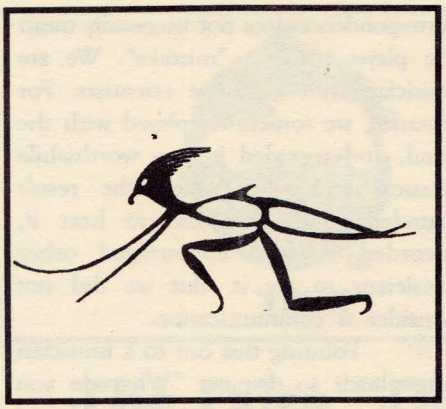
For instance, a player may hear an orca call a phrase, E-D-E, and respond by repeating the same notes. The orca vocalizes the pattern a second time, the player likewise mirrors the phrase again. Back and forth it goes. Then the whale turns silent. A waiting game ensues. Usually, the musician loses patience, repeats the phrase again, first slowly, then faster as if a concerted rush of sound is what it takes to get the orca back on track.

Except the whale was never off-track. It was never responding to the music, and would have made the same sounds if the musician hadn't played anything. This simultaneity of response is of the same basic ilk as Paul Winter's affable studio compositions that include animal calls as overdubbed elements. However, a lack of correspondence does not necessarily mean the player made a "mistake". We are musicians not cognitive scientists. For instance, we sometimes played with the wind, and regarded it as a worthwhile musical endeavor. When the result sounded good, we liked to hear it, recorded it, and encouraged other musicians to try it. But we did not consider it communication.

Pointing this out to a musician often leads to dispute. "What do you mean I wasn't communicating? I heard it! The whales were talking to me!" One may well ask why so many players persist in confusing orca *Karaoke* with real-time communication.

The mistake is partly a function of a charged playing environment. Our studio is a rocking boat anchored in a wilderness cove. The sessions occur late at night, often with a hard rain pounding on the roof. The candlelight we favor to conserve electricity casts an eerie glow over the proceedings, contorting shadows. When the wind blows, the waves come up, the boat rocks, the floor moves, sometimes enough to knock a musician from one wall to the other. The underwater audio system displays innumerable pinprick lights flashing on and off. The speakers resound with colossal gurgles, oddball ker-plunks, the banging of a dinghy, the glissando whoosh of an anchor line flexing against the hull, the obscure croaking of bottom fish. The total effect is disorienting, so much so that certain water noises have prompted listeners to examine their clothing for signs of wetness.

Then the whales arrive. From faraway, their whistles resound through the wall speakers like a saxophone chorus playing a bee-bop refrain. Certain calls occasionally rise above the fray, slithering, soaring, and dive-bombing with the wild abandon of a Charlie Parker solo. Other calls seem to balance this boldness, they fold in upon themselves like a dainty flower closing its petals at sunset. A musician plays a few tentative notes in response. The whales turn silent for a minute or two. When we hear them vocalize again, it is much louder, a sure sign they have moved closer. If they



China, Han Dynasty Pea

come close enough, the orcas start echolocating the boat, perhaps trying to discover the source of the music. At a distance of three hundred feet, these echolocation clicks remind us of a woodpecker knocking on a tree. At twenty feet, they sound like World War II. It's overwhelming

Now the orcas are whistling at such a loud volume their calls seem to explode into the darkened room, settling in like an army of occupation. The overall sensation is not so much that the orcas are close by and vocally active but, rather, that one of them has inhaled the boat with all of us inside it. We feel like latter-day Jonahs and Giopettos, although if not precisely swallowed whole into the belly of the whale, then certainly our ears are being sucked inside the moist lips of it's vibrating blowhole. Vocalizing at the volume of a loud rock and roll band, every sound an orca makes (and some it doesn't) suggests linkage. When a skilled musician mimics their calls with aplomb, no one aboard is left unaffected.

By the time the whales have made their exit, everyone feels spit out, exhausted, quenched...and witness to a bona fide encounter. At such a moment, the question of whether the dialogue was genuine or counterfeit seems moot, a sorry attempt to superimpose an analytical frame over a profoundly emotional and spiritual experience.

One might imagine it takes nothing more than a little practice to tell the difference between communication and wishful thinking. It takes more than that. These respondents really are whales, a truth that confounds a player even as it hints of a secret knowledge.

Climbers of Mount Everest describe a *death zone* above 25,000 feet, a place so lacking in oxygen that the human body operates by remote control, guided by sheer will because no one trusts their senses. A similar, although more benign perceptual warping occurs on our boat. Although I have devoted many years of my life exploring music with orcas, I would have never learned the difference between interaction and simultaneity by paying attention only to the sessions as they unfolded on the boat.

I learned it, instead, by studying recordings of the same events in the comfort of a home studio. The knowledge came to me in a rush, like glimpsing a face hidden within the folds and textures of a surrealistic painting. The moment I heard the difference, I heard it ever after. Unfortunately, the distinction hinges on a close listening of musical inflections, and defies a literal explanation.

Though describing the signs of interaction may be difficult, the techniques that foster communication are straightforward. A developed sense of courtesy is fundamental. Start off playing quietly. Treat the music as an invitation. Visualize the bond of time and place as a sanctuary filled with music. Feel what it means to get on whale time. If the orcas start to leave, give them up because the interspecies ensemble has no chance to form. Don't *try* to communicate; it's a contradiction in terms that impedes nexus. Remain humble to the fact that music—and especially "beautiful music"—is a judgment call, and a species-specific presumption.

The sounds a musician casts into the water may just as easily be interpreted by an orca as an intrusion, or even worse, as the acoustic analogue to poisoned meat set out to kill coyotes. The orca who draws close to a sound session today, may have to dodge a fisherman's bullet tomorrow. This is not conjecture. In 1986, the year before our sextet met in Johnstone Strait, 80% of the orcas in these waters possessed bullet scars. Much of the violence was perpetrated by fishermen who perceived the salmon-eating whales as a threat to their livelihood. The advent of whale-watching and eco-tourism has caused this wanton gunfire to diminish markedly. However, it adds intolerable noise.

Side A and B

On the night our sextet met, I vividly recall feeling uneasy about Mike Sofen's whereabouts. It was a pitch-black drizzly night. The current was running strongly. And Mike was alone in an open inflatable dinghy, no doubt hunched under a plastic tarp, using a flash light to locate the tape recorder buttons. We were concerned not only for his safety, but that he wasn't going to make a good recording.

Next morning, I found him eating breakfast, and asked about last night's session. He shrugged his shoulders, told me the dinghy kept drifting away from our boat. Sure, he recorded it, but it wasn't worth anything. He brightened to declare that there were a few good moments of *just* whales.

Returning home, I gave the recordings a cursory listening, found nothing of sufficient interest, then stored them in a closet, where they have gathered dust for thirteen years.

Overjoyed

It took two weeks to listen to the twelve 90 minute tapes from the 1985 sessions. There's a lot of spirited male percussion, a women's chorus, a reggae chord progression repeated over and over again for hours at a time. The whale's are engaged throughout, which is the reason that the 1985 sessions comprise the bulk of material used in IC's commercial CD, Orcas Greatest Hits.

It took a week for me to wade through six tapes from the summer of 1986. The most interesting music that year consists of a two-hour session of myself playing a solo jazz progression. The whales go absolutely nuts on it.

As I start to plow through the hours of material from the 1987 Orca Project, I am finding much undiscovered material recorded on the B sides. There is a thoughtful and subtle performance by Nancy Rumbel answering the orcas on oboe, and another one of the lama chanting OM MANI PADME HUM.

I want everybody in the world to hear the Lama chanting while the orcas echolocate nearby. At this moment, his prayer possesses the muffled fidelity of a session recorded through a telephone line. That will improve through the use of digital tricks and filters.

If you'd like to hear some of it, get yourself an MP3 player, then send me an email at beluga@interspecies.com. I'll mail you something.

—Jim Nollman, March 00

A Dog in the Lifeboat

Marc Bekoff

Recently, I've been fortunate to teach fourth-graders at Foothills Elementary School. We considered such topics as animal behavior, ecology, conservation biology, and the nature of human-animal interaction. I was astounded by the level of discussion. The class centered on the guiding principles of Jane Goodall's Roots & Shoots program, whose basic tenets are that every individual is important and every individual makes a difference. The program has three components: care and concern for animals, human communities, and the places in which we all live together.

All the students had actively been engaged in projects that fulfilled the three components. They had participated in, or suggested for future involvement, such activities as recycling, being responsible for companion animals, reducing driving, developing rehabilitation centers for animals, helping injured animals, getting companion animals from humane shelters, boycotting pet stores, tagging animals so if they get lost people would know who they are, visiting senior citizen centers and homeless shelters, punishing litterbugs, and punishing people who harmed animals.

We discussed how easy it is to do things that make a difference and also develop a compassionate and respectful attitude towards animals, people, and environments. One student noted that by walking the companion dog who lived with his elderly neighbor and cleaning up after the dog, he performed activities that satisfied all three components.

One of our discussions was called "the dog in the lifeboat." There are three humans and one dog in a lifeboat and one of the four has to be thrown overboard because the boat can't hold all of them. Generally, when this situation is discussed, most people agree that all other things being equal, reluctantly the dog has to go.

There are a few pertinent variations on this theme. For example, perhaps two of the humans are healthy youngsters and one is an elderly person who is blind, deaf, paralyzed, without any family or friends, and likely to die within a week. The dog is a healthy puppy.

The students admitted this was a very difficult situation and that maybe the elderly human might be sacrificed because he had already lived a full life, wouldn't be missed, and had little future. Indeed, this is very sophisticated thinking that perhaps the elderly person had less to lose than either of the other humans or the dog. Let me stress that all students agreed that this line of thinking was not meant to devalue the elderly human. And, in the end, the students (and most people) reluctantly conclude that regardless of the humans ages or other characteristics, the dog has to go.

The level of discussion overwhelmed me, with children voicing considerations about quality of life, longevity, value of life, losses to surviving family and friends. Before we ever got to discuss alternatives, all the students agreed that they wanted to work it out so that no one had to be thrown overboard. Why did any individual have to be thrown over they asked? Lets not do it.

When I said that the example required at least one individual be tossed, they said this wasn't acceptable! I sat there smiling and thinking, now these are the kinds of people in whom I'd feel comfortable placing my future. Some ideas about how all individuals could be saved included having the dog swim along the side of the boat and feeding her, having them all switch off swimming, taking off shoes and throwing overboard all things that weren't needed to reduce weight and bulk, and cutting the boat in two and making two rafts.

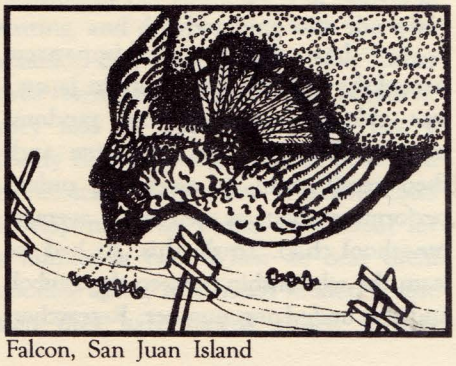
All students thought that even if the dog had to go she would have a better chance of living because more could be done by the humans to save the dog than vice versa. Very sophisticated reasoning indeed. I've discussed this example many times and never before has a group unanimously decided that everyone must be saved.

Marc Bekoff is an IC member. He teaches Environmental, Population and Organismic Biology at CU-Boulder. Contact him at:

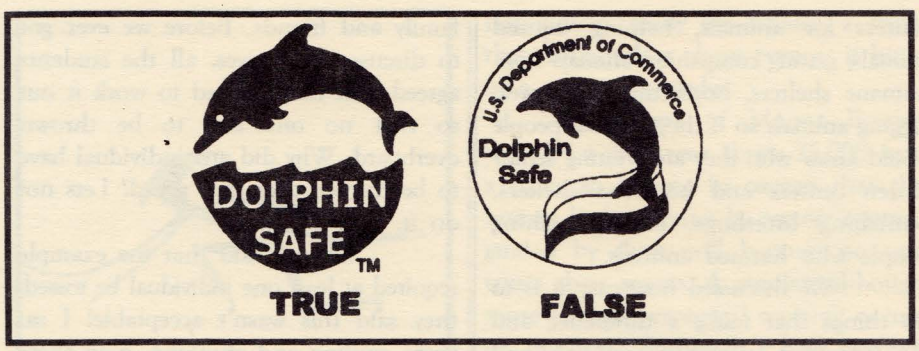
marc.bekoff@colorado.edu

for information about Roots & Shoots programs, go to:

www.janegoodall.org.



Falcon, San Juan Island



The False "Dolphin Safe Label

Ben White

Thanks to the U.S. Department of Commerce, it is now easy to tell which canned tuna one should **not**, under any circumstances buy: the one with their "dolphin Safe" label! In an effort to dupe American consumers, the agency has cooked up this new label to describe tuna caught under "The Dolphin Death Act" of 1997. Under pressure from a Mexican WTO challenge asserting that our embargo on tuna caught by chasing, encircling, and netting dolphins is an unfair trade restriction of their dolphin-deadly tuna, the U.S. government has changed the definition of dolphin safe. Under the new label, dolphins can still be harassed, chased for hours by speed boats and helicopters, and be caught in purse-seine nets so long as no dolphins are *seen* by a single observer to be killed or seriously injured.

Fortunately, you still have a choice. Tuna bearing the old label that says "Dolphin Safe" **without** the Department of Commerce banner, is still caught without setting nets on dolphins. Because the major tuna packers in the United States have heard your voice clearly, all of them are sticking with the old label and the old definition. Chicken of the Sea, Bumblebee, and Star Kist have all promised to refuse to buy dolphin-caught tuna or use the department of Commerce's lying label.

Ben White is a cetacean activist, the originator of the Seattle WTO Turtle brigade, and a board member of Interspecies Communication Inc. This article first appeared in the AWI Quarterly. For more info: www.animalwelfare.com

Intelligence Discovers Itself

Rex Wyler

Last month a chimpanzee named Ai, at Kyoto University in Japan, was able to memorize five random numbers between zero and nine and then recall them in ascending order, performing about as well as an average pre-school child. To do this, Ai had to learn the relationship between the symbol and the underlying number. Researcher Nobuyuki Kawai reported that in one session Ai was distracted by other chimps outside the lab, then returned to complete the test accurately, showing impressive memory retention.

In Atlanta, Frans de Waal of Emory University has suggested that chimpanzees might use elementary math skills to count the number of predators they see. I imagine that if a wild chimp sees three leopards pass behind a tree but only two emerge, he or she knows quite well that one remains hidden, more motivated by survival to learn subtraction than your average first-grader.

Do you find it curious that people question whether or not non-human animals are "intelligent?" Everything that lives is intelligent and animals such as wolves, whales, and chimpanzees are a lot closer to human intelligence and consciousness than we might think. Human advances in art, language, and technology over the last few thousand years are impressive, yet our ancestors of a few million years ago, a blink in evolutionary time, were hardly more advanced than Ai.

Intellect is a general property of biological systems, not the private domain of Homo sapiens. We write and read books—sophisticated systems of symbols and images depicting action, feelings, and meaning. These books convey past experiences to future generations and we rightfully call this culture and intelligence.

What then do we call the process whereby a complex organism, destined to die, writes instructions to make a copy of itself onto strands of chemicals (DNA). Future cells read these instructions, know when and how to turn themselves into various parts of a new organism (liver cells, heart cells, etc). The various parts function together to keep the new organism alive until it can repeat the process. This is the primal intelligence of life, every bit as impressive as our ability to report the daily news or convey the heartache of Prince Hamlet.

Humpback whales sing and repeat songs of fixed melodies. Orcas communicate with one another using a complex vocabulary to herd salmon in teams. They live in close-knit matrilineal families for their whole lives. In the now famous potato-washing culture of macaque monkeys on Koshima Island (giving rise to the "100th monkey" theory) a juvenile female began taking sweet potatoes to the water to clean off the dirt. Her mother and closest peers copied her, and soon the habit spread until the whole population under middle age was also washing potatoes. This is no less a function of culture and intelligence than human parents teaching children to wash their hands.

Wild chimpanzees use sticks to catch ants, one-by-one, from logs. One chimp group improved the efficiency of the technique by collecting many ants on a long stick and sweeping them into the mouth with a single hand motion. "The evidence is overwhelming," says Frans de Waal, "that chimpanzees have a remarkable ability to invent new customs and technologies, and that they pass these on socially."

Anthropologists now know that there were many species of early hominids. It is quite possible that only slight variations in skill led to the dominance of Homo sapiens, the extinction of the others, and the current hegemony of our species on the planet. Intelligence belongs to nature. Humans have accomplished a great deal, but we have no exclusive claim. Perhaps the real test of our intelligence will be whether or not we can devise a truly sustainable culture that can enjoy a long, peaceful co-existence with the whole of the natural world.

Rex Wyler is the publisher of:
Shared Vision Magazine, February 2000, 873 Beatty Street Vancouver, BC V6B 2M6.
publisher@shared-vision.com

Calypso Orchids, San Juan Island

Book Reviews

AMERICA'S ANCIENT FORESTS

FROM THE ICE AGE TO THE AGE OF DISCOVERY
by Thomas M. Bonnickson, John Wiley & Sons, NYNY, 2000

A very special college textbook that treats trees, forests, and the animals living in them, as collective entities possessed of ethology, behavior, and history. Starting at the retreat of the ice sheets, the author describes the slow migration and melding of forests and species, turning northward as the climate warmed. The book includes a demographic investigation of the forests as they appeared to the first European explorers. The changes wrought in the mere 400 years since, are as shockingly dramatic as everything that went before. I highly recommend this book, as a most readable history of the changing forests of North America.

...Forests represent a loose collection of species that grow together for a time as they pass each other on the way to somewhere else. Each species arrives and departs independently from other species. Plants move very slowly; animals move more quickly; but they all continue to move either to escape an inhospitable environment or take advantage of a new one. If they can not move, they adapt. If they can not adapt, they become extinct. Thus forests redefine themselves as plants and animals continue their relentless shuffling.

...The American chestnut had a commanding presence in the ancient forests. It gained the title of "redwood of the East" because of its great size, dark brown fissured bark, and resistance to decay. The largest specimens stood as much as 130 feet tall with trunks up to 10 feet thick, and most mature trees were 100 feet tall and 4-5 feet thick.

MUSIC, MYTH, AND NATURE

OR THE DOLPHINS OF ARION
François-Bernard Mâche, Harwood Academic Publishers, Philadelphia, 1992.

During a recent trip to Europe, I spent time with ethnomusicologist, Dario Martinelli, an authority in the growing discipline of animal aesthetics. He recommended this essay written by the well known French composer. Dario regards it as the best intellectual overview of interspecies communication.

Myth and music are represented here as the best tools we have to express a deep longing to connect to nature. Mache's explication of several ancient myths—especially the dolphins who save humans from drowning—draws the intriguing conclusion that the historical evolution of musical thought is co-dependent on the human understanding of natural phenomena. It seems another way of saying that the environmental crisis is a crisis in human perception. Likewise, to grant myth a genuine power to guide our lives and our actions, teaches us that nature and culture need not oppose one another.

The book is sometimes clumsy in its language, which makes me wish for a better translation.

...In the majority of mythic forms, music is of the essence. Divine or heroic representations are only a presentation of the forces acting within us. The great theater of myth has only the human mind as its real setting. What the stories of Arion and Dionysus try to tell us is that in order to escape the perverse temptations of the desire for power, especially that which is conferred by socially-recognized talent, one must dare to risk the great leap into primordial consciousness.

...The imitation of animal sounds by primitive groups of hunters is likely to give us the most direct image of the common source of myth and music.